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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/156,078	09/17/98	LAURILA	M 98208

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MM42/1115

EXAMINER

HO, A

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 11/15/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/156,078

Applicant(s)

LAURILA et al.

Examiner

Allen C. Ho

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 1998.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-15 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 1998 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
2. ☐ received in Application No. (Series Code / Serial Number) _____.
3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 14) ☒ Notice of References Cited (PTO-892)
- 15) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 16) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 17) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 18) ☐ Notice of Informal Patent Application (PTO-152)
- 19) ☐ Other:

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DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the sentence that begins in line 9 is incomplete. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities:

Page 8, line 5, "converyor" should be "--conveyor--".

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: "25", "72", "74", "76", "78". Correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. Claim 14 recites the limitation "belt scale" in line 1. There is insufficient antecedent basis for this limitation in the claim.
7. Claim 15 recites the limitation "flowmeter assembly" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

9. Claims 1, 3, 5, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Page *et al.* (U. S. Patent No. 4,486,894).

Page *et al.* describe a method and an apparatus for determining the ash content of coal. The apparatus comprises an online sampling means (3) for receiving a sample, an x-ray source (1), and a fluorescence detector (5). The x-ray source and the fluorescence detector are disposed in a backscattering geometry (Fig. 1). The transmission axis and the detection axis are aligned to within 30 degrees of the sample surface normal (Fig. 1). Furthermore, this reference teaches using the readings of a density gauge to compensate for changes in bulk density and in moisture content (column 1, lines 46-50).

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10. Claims 1, 3, and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Elder (U. S. Patent No. 5,750,883).

Elder describes a method and an apparatus for determining the salt content of snack food by x-ray fluorescence. The apparatus for online elemental analysis comprises an online sampling means for receiving a sample (40), an x-ray source (48), x-ray fluorescence detectors (50 and 52), and a polypropylene window (51). The x-ray source and the fluorescence detectors are disposed in a backscattering geometry (Fig. 3). The transmission axis and the detection axis are aligned to within 30 degrees of the sample surface normal (Fig. 3).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Page *et al.* (U. S. Patent No. 4,486,894) in view of Zingaro (U. S. Patent No. 3,864,570).

Page *et al.* describe an apparatus for online fluorescence analysis. However, they do not teach employing a thin polymeric window between the sample and the x-ray detector. Zingaro teaches separating the detector (6) from the exterior using ultra-thin windows (15 and 16) which consist of a synthetic polyester resin such as polypropylene (column 3, lines 14-17). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to

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shield the x-ray detector from the exterior with a thin window, otherwise condensation would occur on the detector which is normally chilled to well below the freezing temperature to reduce the thermal noise. As noted by Powell (U. S. Patent No. 5,261,977), thin polymeric films such as polypropylene are most capable of fulfilling the optical and mechanical requirements as window materials because they contain essentially only carbon, which is low in x-ray absorption (column 2, lines 3-6).

13. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Page *et al.* (U. S. Patent No. 4,486,894) in view of McMullen *et al.* (U. S. Patent No. 4,550,768) and Ken Carr-Brion (1989).

Page *et al.* describe an apparatus for online fluorescence analysis. However, their apparatus does not comprise a shaping device for providing a uniform sample profile and a means for detecting the presence of sufficient sample material. McMullen describe a compactability system for measuring the compactability of granular materials. It comprises a shaping device (122) and controlling means (132). It further comprises a means (126 and 128) for detecting the presence of sufficient sample material. Ken Carr-Brion teaches the standard form of presentation for liquids and slurries is a flow cell (P. 44). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a shaping device (a plow for solids or a flow cell for liquids) and a means for detecting the presence of sufficient sample material in an online fluorescence analysis system. In an automated online analysis operation, a shaping device, as determined by the form and shape of the sample, is a necessary requirement in order to facilitate sample presentation in an orderly fashion. In other

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words, one would be motivated to eliminate as many random variables from the system as possible in order to simplify the system and to keep the operating cost down. Moreover, since this system is meant to be automated, it would be logical to employ a means for detecting the presence of samples and to use that as a control variable.

14. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Page *et al.* (U. S. Patent No. 4,486,894) in view of Gould (U. S. Patent No 4,882,927).

Page *et al.* describe an apparatus for online fluorescence analysis. However, their apparatus does not comprise a microwave moisture reader or a belt scale. Gould teaches employing an on-line microwave moisture analyzer (column 7, lines 52-56) and a belt scale (13). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a microwave moisture reader and a belt scale in the online fluorescence analysis system in order to determine the price of the coal. The selling price of the coal is directly proportional to the weight, which is affected by the moisture content in the coal. Since water has well known absorption bands in the microwave range, a person would be motivated to use a microwave moisture reader to determine the moisture content in the coal. Furthermore, the belt scale would be ideal for weighing the coal; since it is part of the conveyor belt, no additional steps or equipment are required.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Page *et al.* (U. S. Patent No. 4,486,894) in view of Lovejoy (U. S. Patent No. 5,646,354).

Page *et al.* describe an apparatus for online fluorescence analysis. However, their apparatus does not comprise a flowmeter assembly. Lovejoy teaches using a flowmeter to

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measure the volume flow rate of a fluidic material that is flowing in a conduit. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a flowmeter into an online fluorescence analysis system to determine the volume flow rate when the samples are in the form of a slurry. Since the price of the coal is determined by its weight, which is proportional to the volume, it is necessary to measure the volume at the time the price is to be determined.

Allowable Subject Matter

16. Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. The following is a statement of reasons for the indication of allowable subject matter:

The allowable subject matter in claim 2 refers to mounting the detector within 2 inches of the sample. The allowable subject matter in claim 4 refers to having the transmission axis and the detection axis parallel to each other.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- (1) Kim (U. S. Patent No. 5,048,761) describes an apparatus and method for monitoring and controlling the flow of fluid transported solid particles.

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- (2) Huber *et al.*, "High performance, thermoelectrically cooled x-ray and gamma ray detectors", Nuclear Instruments and Methods in Physics Research **B 99**, 665 (1995).

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (703) 308-6189. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald T. Hajec can be reached on (703) 308-4075. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Allen C. Ho
Examiner
Art Unit 2876

Allen C. Ho
November 9, 1999


David P. Porta
Primary Examiner